



National Electric Power Regulatory Authority

Islamic Republic of Pakistan

Registrar

NEPRA Tower, Ataturk Avenue(East), G-5/1, Islamabad
Ph: +92-51-9206500, Fax: +92-51-2600026
Web: www.nepra.org.pk, E-mail: registrar@nepra.org.pk

No. NEPRA/R/DL/LAG-273/14/50-55

February 03, 2015

Mr. Zhong Haixiang
Director/Authorized Representative
Port Qasim Electric Power Company (Pvt.) Limited
House No. 11, Street No. 56,
Sector F-7/4, Islamabad

Subject: **Generation Licence No. IGSP/47/2015**
Licence Application No. LAG-273
Port Qasim Electric Power Company (Pvt.) Limited (PQEPCPL)

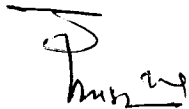
Reference: *Your letter No. PQEPCPL/NEPRA/Generation/001, dated August 13, 2014.*

Enclosed please find herewith Determination of the Authority in the matter of Generation Licence Application of PQEPCPL along with Generation Licence No. IGSP/47/2015 annexed to this determination granted by the National Electric Power Regulatory Authority to PQEPCPL for its 1320.00 MW Imported coal Based Thermal Generation Facility located at Bin Qasim Industrial Part at Port Qasim, Karachi, Sindh, pursuant to Section 15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997).

2. Please quote above mentioned Generation Licence No. for future correspondence.

Enclosure: **Generation Licence**
(IGSP/47/2015)




(Syed Safer Hussain) 03.02.15

Copy to:

1. Managing Director, Private Power & Infrastructure Board, 50-Nazimuddin Road, F-7/4, Islamabad.
2. Chief Executive Officer, NTDC, 414-WAPDA House, Lahore
3. Chief Operating Officer, CPPA, 107-WAPDA House, Lahore
4. Chief Executive Officer, K-Electric Limited, KE House No. 39-B, Sunset Boulevard, Phase-II, DHA Karachi
5. Director General, Sindh Environmental Protection Agency, Plot No. ST 2/1, Sector 23, Korangi Industrial Area, Karachi

National Electric Power Regulatory Authority
(NEPRA)

Determination of the Authority
in the Matter of Generation Licence Application of
Port Qasim Electric Power Company (Private) Limited

January 27, 2015
Application No. LAG-273

(A). Background

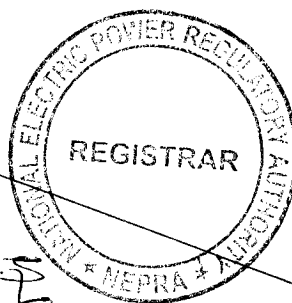
(i). In order to attract private investment in the Power Sector of the country, Government of Pakistan (GoP) has set up Private Power Infrastructure Board (PPIB) as one window facilitator for the interested entrepreneurs.

(ii). In order to meet the future electricity/energy needs of the country and fix the energy mix, the GoP has decided to install huge Generation Facilities/ Thermal Power Plants operating on either imported or indigenous Coal. In order to implement the said initiative, PPIB has issued Letter of Intent (LoI) to various local and foreign investors/groups. PPIB issued a LoI to joint venture of Al Mirqab group of Qatar and Sino Hydro Resources Limited China for setting up an approximately 1320.00 MW Imported Coal based Generation Facility/Power Plant at Port Qasim, Karachi, in the Province of Sindh.

(iii). In order to implement the project, the sponsors of the project incorporated a Special Purpose Vehicle (SPV) in the name of Port Qasim Electric Power Company (Private) Limited (PQEPCPL).

(B). Filing of Generation Licence Application

(i). In accordance with Section 15 of Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (the NEPRA Act/the Act), PQEPCPL submitted an application on August 20, 2014 requesting for the grant of Generation Licence.



(ii). The Registrar examined the submitted application to confirm its compliance with the NEPRA Licensing (Application and Modification Procedure) Regulations, 1999 (the "Regulations"). It was observed that some of required information/documentation was missing. Accordingly, Registrar directed PQEPCPL for submitting the missing information/documentation. PQEPCPL completed the missing information/documentation on September 05, 2014. The Authority admitted the same under Regulation-7 of the Regulations on September 30, 2014 for consideration of grant of a Generation Licence and approved the advertisement about the Notice of Admission (NoA) to be published in daily newspapers, seeking comments of the general public as stipulated in Regulation-8 of the Regulations.

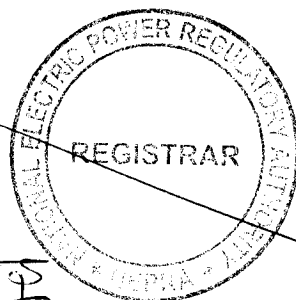
(iii). The Authority also approved the list of interested/affected parties for inviting comments or otherwise assisting the Authority in the matter as stipulated in Regulation-9 of the Regulations. Accordingly, NoA was published in one Urdu and one English National Newspaper on October 04, 2014. Further, separate notices were also sent to Individual Experts/Government Ministries/Representative Organizations etc. on October 09, 2014 for submitting their views/comments in the matter for the assistance of the Authority to arrive at an informed decision.

(C). Comments of Stakeholders

(i). In reply to the above, the Authority received comments from six (06) stakeholders. These included Ministry of Petroleum and Natural Resources (MoP&NR), Energy Department Govt. of Sindh (EDGoS), Pakistan Mineral Development Corporation (Pvt.) Limited (PMDCL), Port Qasim Authority (PQA), Ministry of Water & Power (MoW&P) and Ministry of Ports & Shipping (MoP&S).

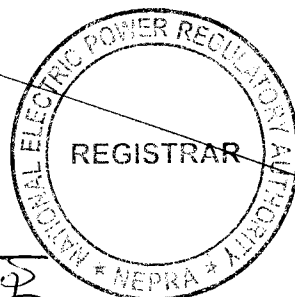
(ii). The salient points of the comments offered by the above stakeholder are summarized in the following paragraphs: -

- (a). MoP&NR remarked that PQEPCPL intends to install Imported Coal Fired Thermal Power Plant for which no gas is required.



Therefore, this Ministry has no objections/comments for the grant of Generation Licence to PQEPCPL.

- (b). EDGoS supported the grant of Generation Licence to PQEPCPL;
- (c). PMDCPL emphasized the need of utilizing indigenous coal of Lakhra Coal Mines;
- (d). PQA commented that sponsors had approached for allotment of 200 acres land in Eastern Industrial Zone of PQA for establishment of Coal Fired Power Project Plant. The Board of PQA approved allotment of the land on occupancy value of Rs: 2.5 million per acres and accordingly a MoU was signed on April 28, 2014. The sponsors had paid 25% of the occupancy value of the land, while the balance amount is still awaited. Meanwhile, an agreement between the sponsors and PQA was negotiated and concluded but the same has not been signed/executed as yet. PQA had provided all the necessary requisite information for the said agreement including draft lease and schedules etc. The sponsors were required to form a Company in Pakistan under the Companies Ordinance, 1984 for signing of the Agreement. The share holders of the said group have now obtained Certificate of Incorporation from SECP. In view of the said, PQA is ready to sign the Agreement, once the full payment of land and possession fee etc. is paid;
- (e). MoP&S confirmed that the PQA (a statutory body under administrative control of MoP&S) is in process to sign the land lease agreement with PQEPCPL. Further, MoP&S expressed



its no objection pertaining to grant of Generation Licence to PQEPCPL; and

- (f). MoW&P stated that the Authority may process the Generation Licence Application as per provisions of the NEPRA Act/Rules, GoP Policy guidelines and keeping in view the comments of PPIB & NTDC by ensuring compliance with environmental standards.

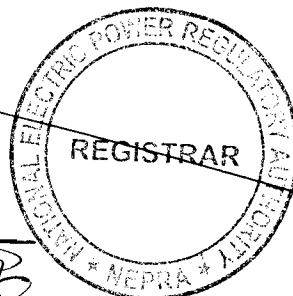
(iii). The Authority examined the above comments of the stakeholders. The Authority found comments of most of stakeholders in favor of the request of PQEPCPL for the consideration of grant of Generation Licence. Only PMDCPL and PQA made certain observations as explained at Para C(ii)(c) and C(ii)(d) above. In view of the said, the Authority considered it appropriate seeking perspective of PQEPCPL on the observations of PMDCPL and PQA.

(iv). In its rejoinder to the comments of PMDCPL, it was stated that PPIB had issued the Lol on the basis of Imported Coal therefore, no provision of indigenous coal has been made. Regarding the observations of PQA, it was submitted that there were certain confusions pertaining to the Up-Front Tariff. However, lately the same have been resolved therefore, the sponsors would be completing the formalities pertaining to the land acquisition and payments.

(v). In view of the above clarifications, the Authority considered it appropriate to process the application of PQEPCPL for the consideration of the grant of Generation Licence as stipulated in the Regulations and NEPRA Licensing (Generation) Rules, 2000 (the Rules).

(D). Grant of Generation Licence

(i). Electricity is a key infrastructural element for economic growth. The electricity consumption per capita has a strong correlation to the Social

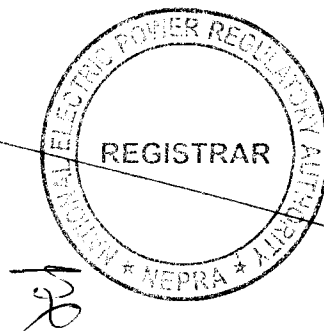


Development indices (HDI, life expectancy at birth, infant mortality rate, and maternal mortality) and Economic Indices (such as GDP per capita).

(ii). Increasing electricity consumption per capita can directly stimulate faster economic growth and indirectly achieve enhanced social development, especially for low and medium human development countries. Electricity plays a key role in both economic and social development. In short, the Economic Growth of any country is directly linked with the availability of safe, secure, reliable and cheaper supply of electricity. In view of the said, the Authority is of the considered opinion that for sustainable development all types of power generation resources including Coal, Hydel, Wind, Solar and other Renewable Energy (RE) resources must be tapped and developed on priority basis in Public and Private Sectors.

(iii). The existing energy mix of the country is heavily skewed towards the costlier thermal Generation Facilities/Power Plants, operating on Imported Furnace Oil. The Import of Furnace Oil not only creates a pressure on the precious foreign exchange reserves of the country but also causes an increase in the consumer end tariff. The increase in the consumer end tariff not only results in higher inflation but it also affects the competitiveness of the local Industry with its foreign peers. In order to address the said issues, the Authority considers it imperative that efforts must be made to change the energy mix based on relatively cheap fuels. In view of the depleting Natural Gas Reserves in the country and relatively longer lead time for the Hydro Electric Power Projects to materialize, the Coal Power Plants are considered the best option in the Short and Medium Term Planning. Therefore, in order to reduce the Demand-Supply gap and to achieve sustainable development, it is vital that indigenous as well as imported Coal Projects are given priority for power generation and their development is encouraged. In view of the said, the Counsel of Common Interests (CCI) approved the Power Policy 2013 which envisages rationalizing the energy mix and reducing the demand-supply gap through coal based power generation. In consideration of the said, the Authority is of the view that the proposed project of PQEPCPL is consistent with the provisions of Power Policy 2013.

WA

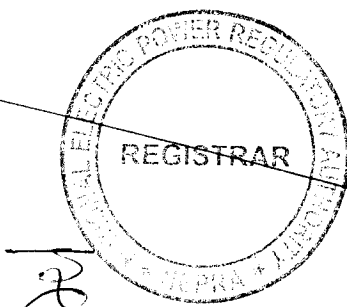


M.

(iv). The Authority has examined the details of the proposed Generation Facility of PQEPCPL with reference to its location, the type of technology being deployed, interconnection arrangements for dispersal of electric power and other specific details. The Authority has observed that the Project will be located in Port Qasim Industrial Park, southeast to the city of Karachi on the north bank of Arabian Sea with geographical coordinates of 24° 47' 2.4" N, 67° 22' 20.4" E. In this regard, PQA has confirmed the allocation of 200 acres of land for the project. Further, the PQEPCPL had already paid 25% of the value of the land and the agreement for lease of land is in advance stage of signing and is expected to be finalized soon. The Authority has observed that the proposed Generation Facility/Thermal Power Plant will be consisting of two (02) units each of 660MW. Each unit will have a Super Critical Boiler, Steam Turbine and Generator. The boiler will be fueled by imported Sub-Bituminous Coal (from Australia, Indonesia, South Africa or Botswana) that which will be transported by ship and will be unloaded at the dock to be constructed at site of the Generation Facility for which a new pile type jetty of 70,000 tons of load has been planned within the south boundary of the site area. The Authority considers that the Supercritical Technology is very mature with many units in operation worldwide for many years with good track records. PQEPCPL has confirmed that the selected main parameters of the Steam Turbine and Boiler (571°C and 25.40MPa) of the Generation Facility are at the high end of the supercritical class. Further, PQEPCPL has confirmed that the Gross Efficiency of the proposed Generation Facility/Power Plant will be more than 41% (i.e. 42.03%) whereas the Net Efficiency of same will be greater than 38.00% and will result in less emission per unit of electricity generated. The Authority considers that the high efficiency of the proposed Generation Facility and the low cost of fuel (i.e. Imported Coal) will generate the lowest cost power and will provide an economically feasible solution to relieve power shortages in the country.

(v). The Authority is extremely satisfied that the proposed Power Purchaser (i.e. CPPA/NTDC) has endorsed the site and parameters of the project. NTDC has confirmed about carrying out of the required studies pertaining to the

WA



M

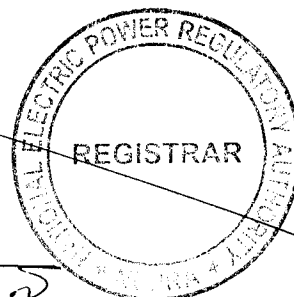
dispersal of electric power from the proposed Generation Facility. Further, NTDC has confirmed that the electric power from the Imported Coal based Generation Facility of PQEPCPL will be evacuated through two (02) 500 KV (Quard Bundles Transmission Lines on AASC Greely Conductor (Measuring about 180-KM in length), connecting the said facility with proposed 500 KV Matiari Grid Station.

(vi). The term of a Generation Licence under the Rule-5 (1) of the Rules, is to be commensurate with the maximum expected useful life of the units comprised in a generating facility. The proposed Generation Facility/Power Plant of PQEPCPL will be consisting of two Steam Turbine Units of 660.00 MW each. According to the International benchmarks available, the useful life of a Steam Turbine is normally taken as thirty (30) years from its Commercial Operation Date (COD). Further, PQEPCPL has also confirmed that it will be negotiating a Power Purchase Agreement (PPA) with Power Purchaser having a term based on this available benchmark. In view of the said, the Authority fixes the term of the proposed Generation Licence of PQEPCPL to be thirty (30) years from its COD.

(vii). Regarding the Tariff that the generation company (i.e. PQEPCPL) will charge from its Power Purchaser, PQEPCPL has applied for the unconditional acceptance of the Up-Front Tariff for Coal. However, the application of PQEPCPL is still under consideration and the same will be decided within the time prescribed in the relevant regulations. Pending the acceptance and grant of the Up-Front Tariff, the Authority directs PQEPCPL to charge only such tariff which has been determined, approved or specified by the Authority as stipulated in Article-6 of its proposed Generation Licence.

(viii). The proposed Generation Facility of PQEPCPL, for which Generation Licence has been sought, is based on Imported Coal. The Coal based Generation Facilities may be harmful to environment because of emission of Green House Gases (GHG) and production of ash and other effluents. In this regard, PQEPCPL confirmed that proposed Generation Facility would have Air emission control

[Handwritten mark]



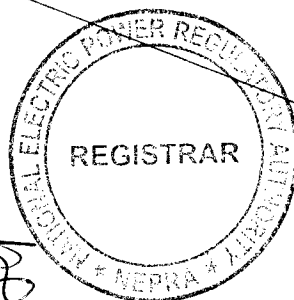
[Handwritten signature]

[Handwritten mark]

equipment [including an Electro Static Precipitator (ESP)]. Further, a Flue Gas Desulfurization (FGD) system would also be installed to lower GHG emissions. Also selective catalytic reduction system (SCR) would be installed to ensure that NO_x emission complies with National and Global standards. Waste water would be treated and utilized in-plant, with a small quantity of effluent discharged after further treatment to meet environmental standards. Conventional solid wastes would be disposed at the ash pond, while hazardous waste would be collected and treated in-plant. Periodic monitoring of groundwater would be done to prevent water contamination. Efforts would be made to maximize use of fly ash and gypsum to reduce waste disposal. Water would be constantly sprayed in the coal yard to reduce coal dust. Sound attenuation material would be applied on machinery generating high noise levels. Pollution monitoring system inside and around the station would be set up to constantly monitor the environmental conditions. For the Coal based Power Plant, a lot of ash is produced during its operation. In order to handle ash, it has been informed that a cofferdam will be built around ash yard. Drainage channel will be set at cofferdam foot to prevent it from rainwater washing. In order to prevent fly ash and bottom ash from polluting underground water after being wetted by rainwater, anti-seepage geo-membrane will be laid on bottom of ash yard and inner slope of cofferdam, forming a basin-shaped anti-seepage system, which can isolate fly ash and bottom ash from contacting outside world. In short, PQEPCPL has assured compliance of the Environment Standards and has also provided a No Objection Certificate from Environmental Protection Agency Govt. of Sindh (EPAGoS). However, to ensure that the Generation Facility conforms to the environment during the term of the Generation Licence, a separate article has been included along with other terms and conditions that the Licensee will comply with relevant environmental standards. Further, the Authority also directs PQEPCPL to submit a quarterly report confirming that operation of its proposed Generation Facility is compliant with required Environmental Standards prescribed by EPAGoS.

WAF

2



M

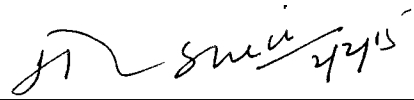
(ix). In view of the above, the Authority hereby decides to approve the grant of Generation Licence to PQEPCPL on the terms and conditions as set out in the Generation Licence annexed to this determination. The grant of Generation Licence will be subject to the provisions contained in the NEPRA Act, relevant rules, regulations framed there under and the other applicable documents.

Authority

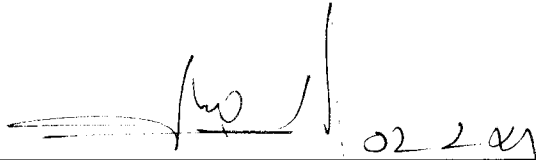
Himayat Ullah Khan
(Member)



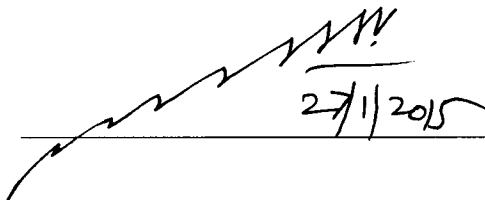
Maj. (R) Haroon Rashid
Member



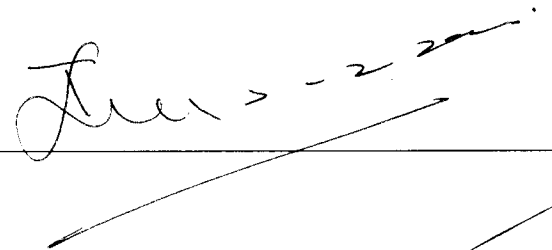
Khawaja Muhammad Naeem
Member

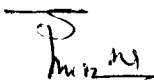


Habibullah Khilji
(Member/Vice Chairman)

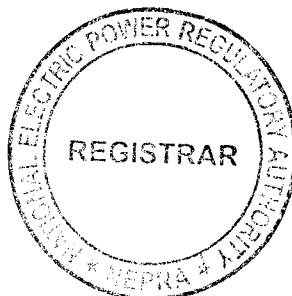


Brig. (R) Tariq Saddozai
Chairman





03.02.15



**National Electric Power Regulatory Authority
(NEPRA)
Islamabad – Pakistan**

GENERATION LICENCE

No. IGSP/47/2015

In exercise of the Powers conferred upon the National Electric Power Regulatory Authority (NEPRA) under Section 15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997, the Authority hereby grants a Generation Licence to:

Port Qasim Electric Power Company (Private) Limited

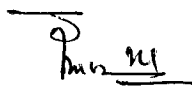
Incorporated under the Companies Ordinance, 1984
Under Corporate Universal Identification No. 0089480, Dated August 12, 2014

**for its Imported Coal Based Thermal Generation Facility
Located at Bin Qasim Industrial Park at Port Qasim, Karachi
in the Province of Sindh**

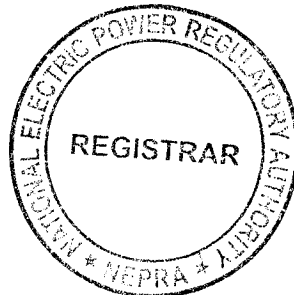
(Installed Capacity: 1320.00 MW Gross)

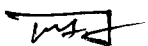
to engage in generation business subject to and in accordance with the Articles of this Licence.

Given under my hand this 03rd day of February Two
Thousand & Fifteen and expires on 30th day of December
Two Thousand & Forty Seven.



Registrar



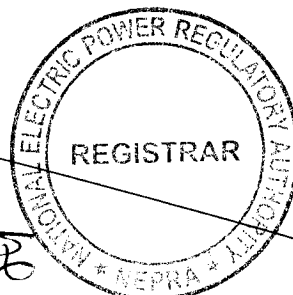




Article-1
Definitions

1.1 In this Licence

- (a). "Act" means "the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997";
- (b). "Authority" means "the National Electric Power Regulatory Authority constituted under section 3 of the Act";
- (c). "Bus Bar" means a system of conductors in the generation facility of the Licensee on which the electric power of all the generators is collected for supplying to the Power Purchaser;
- (d). "Commercial Operations Date (COD)" means the day immediately following the date on which the generation facility of the Licensee is commissioned;
- (e). "CPPA" means "the Central Power Purchasing Agency of NTDC" or any other entity created for the like purpose;
- (f). "Grid Code" means the grid code prepared by NTDC and approved by the Authority, as it may be revised from time to time by NTDC with any necessary approval by the Authority;
- (g). "HESCO" means "Hyderabad Electric Supply Company Limited and its successors or permitted assigns;
- (h). "IEC" means International Electrotechnical Commission or any other entity created for the like purpose and its successors or permitted assigns;

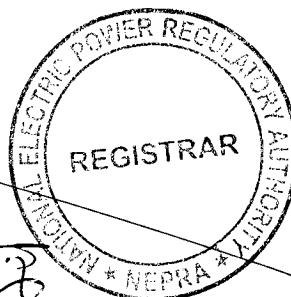


- (i). "IEEE" means the Institute of Electrical and Electronics Engineers and its successors or permitted assigns;
- (j). "Licensee" means "**Port Qasim Electric Power Company (Private) Limited**" and its successors or permitted assigns;
- (k). "NTDC" means National Transmission and Despatch Company Limited and its successors or permitted assigns;
- (l). "Power Purchase Agreement" means the power purchase agreement, entered or to be entered into by and between the Power Purchaser and the Licensee, for the purchase and sale of electric energy generated by the generation facility, as may be amended by the parties thereto from time to time;
- (m). "Power Purchaser" means the CPPA of NTDC purchasing power on behalf of XW-DISCOs;
- (n). "Rules" mean "the National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000";
- (o). "XW DISCO" means "an Ex-WAPDA distribution company engaged in the distribution of electric power".

1.2 Words and expressions used but not defined herein bear the meaning given thereto in the Act or in the Rules.

Article-2
Application of Rules

This Licence is issued subject to the provisions of the Rules, as amended from time to time.



Article-3
Generation Facilities

3.1 The location, size (capacity in MW), technology, interconnection arrangements, technical limits, technical and functional specifications and other details specific to the generation facility of the Licensee are set out in Schedule-I to this Licence.

3.2 The net capacity of the generation facility of the Licensee is set out in Schedule-II hereto.

3.3 The Licensee shall provide the final arrangement, technical and financial specifications and other specific details pertaining to its generation facility before its COD.

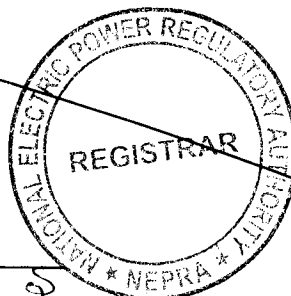
Article-4
Term of Licence

4.1 The Licence is granted for a term of thirty (30) years from the COD of the generation facility.

4.2 Unless suspended or revoked earlier, the Licensee may within ninety (90) days prior to the expiry of the term of the Licence, apply for renewal of the Licence under the National Electric Power Regulatory Authority Licensing (Application & Modification Procedure) Regulations, 1999 as amended or replaced from time to time.

Article-5
Licence fee

After the grant of the Generation Licence, the Licensee shall pay to the Authority the Licence fee, in the amount and manner and at the time set out in the National Electric Power Regulatory Authority (Fees) Rules, 2002.



Article-6
Tariff

The Licensee shall charge only such tariff which has been determined, approved or specified by the Authority in terms of Rule-6 of the Rules.

Article-7
Competitive Trading Arrangement

7.1 The Licensee shall participate in such manner as may be directed by the Authority from time to time for development of a Competitive Trading Arrangement. The Licensee shall in good faith work towards implementation and operation of the aforesaid Competitive Trading Arrangement in the manner and time period specified by the Authority. Provided that any such participation shall be subject to any contract entered into between the Licensee and another party with the approval of the Authority.

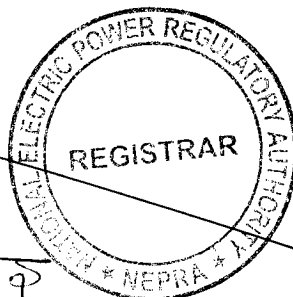
7.2 Any variation or modification in the above-mentioned contracts for allowing the parties thereto to participate wholly or partially in the Competitive Trading Arrangement shall be subject to mutual agreement of the parties thereto and such terms and conditions as may be approved by the Authority.

Article-8
Maintenance of Records

For the purpose of sub-rule (1) of Rule 19 of the Rules, copies of records and data shall be retained in standard and electronic form and all such records and data shall, subject to just claims of confidentiality, be accessible by authorized officers of the Authority.

Article-9
Compliance with Performance Standards

The Licensee shall comply with the relevant provisions of the National Electric Power Regulatory Authority Performance Standards (Generation) Rules 2009 as amended from time to time.



Article-10
Compliance with Environmental Standards

10.1 The Licensee at all times shall comply with the environmental standards as may be prescribed by the relevant competent authority as amended from time to time.

10.2 The Licensee shall provide a certificate on a bi-annual basis, confirming that the operation of its generation facility is in line with environmental standards as prescribed by the relevant competent authority.

Article-11
Power off take Point and Voltage

The Licensee shall deliver power to the Power Purchaser at the outgoing bus bar of its grid station. The up-gradation (step up) of generation voltage up to the required Interconnection voltage level will be the responsibility of the Licensee.

Article-12
Provision of Information

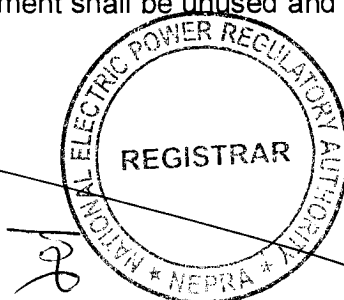
12.1 The obligation of the Licensee to provide information to the Authority shall be in accordance with Section 44 of the Act.

12.2 The Licensee shall be subject to such penalties as may be specified in the relevant rules made by the Authority for failure to furnish such information as may be required from time to time by the Authority and which is or ought to be or has been in the control or possession of the Licensee.

Article-13
Design & Manufacturing Standards

All the components of the generation facility/power plant shall be designed, manufactured and tested according to the latest IEC, IEEE or any other equivalent standards. All plant and equipment shall be unused and brand new.



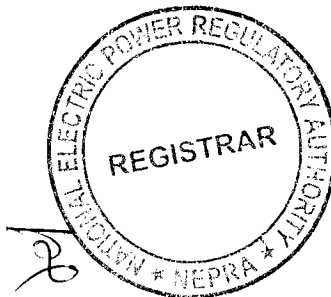




SCHEDULE-I

The Location, Size (i.e. Capacity in MW), Type of Technology, Interconnection Arrangements, Technical Limits, Technical/Functional Specifications and other details specific to the Generation Facilities of the Licensee are described in this Schedule

PTM



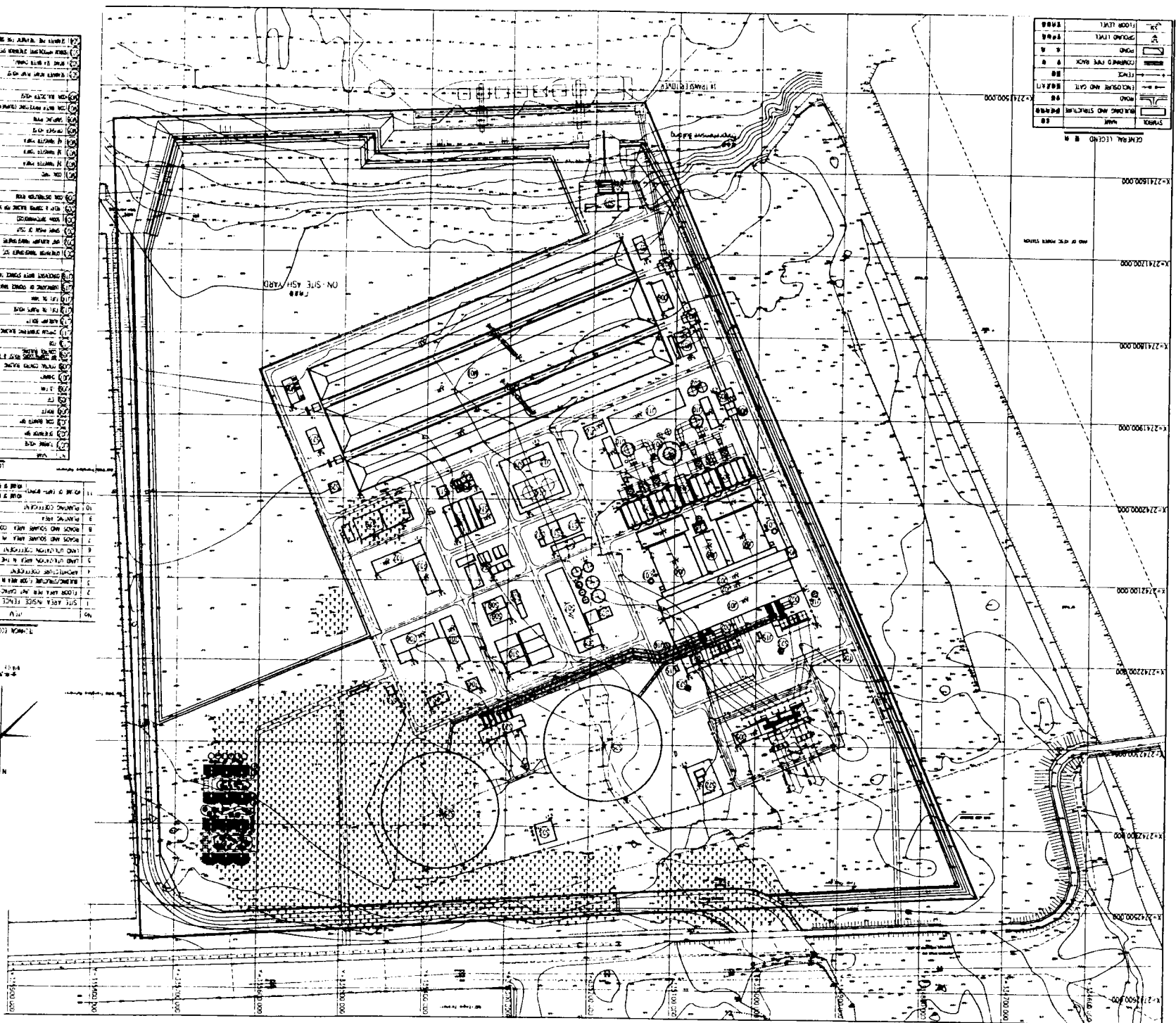


[Handwritten signature]



[Handwritten signature]

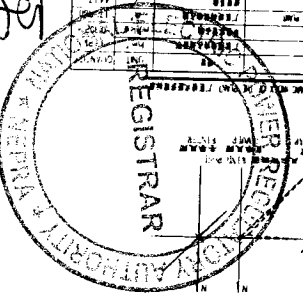
[Handwritten signature]

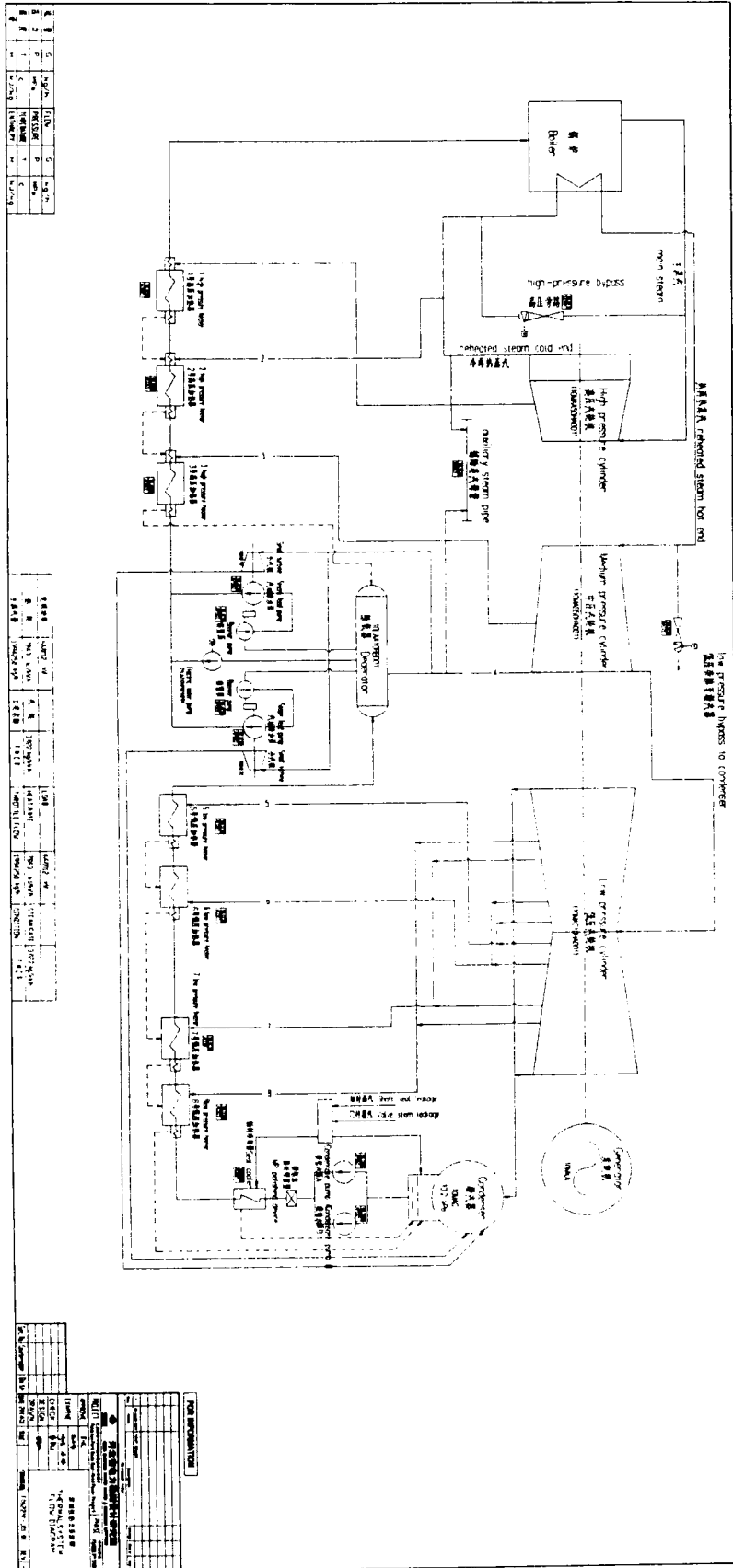


SYMBOL	DESCRIPTION
---	BOUNDARY AND STRUCTURE
---	ROAD
---	1:10000 AND 1:5000
---	LEVEL
---	EXISTING DRAINAGE
---	PROPOSED DRAINAGE
---	PROPOSED LEVEL
---	PROPOSED 1:10000
---	PROPOSED 1:5000

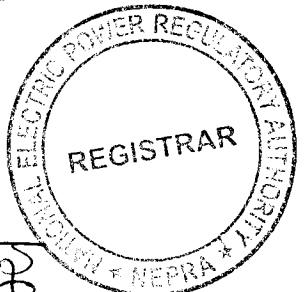
NO.	DESCRIPTION	DATE	BY	CHECKED BY
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50

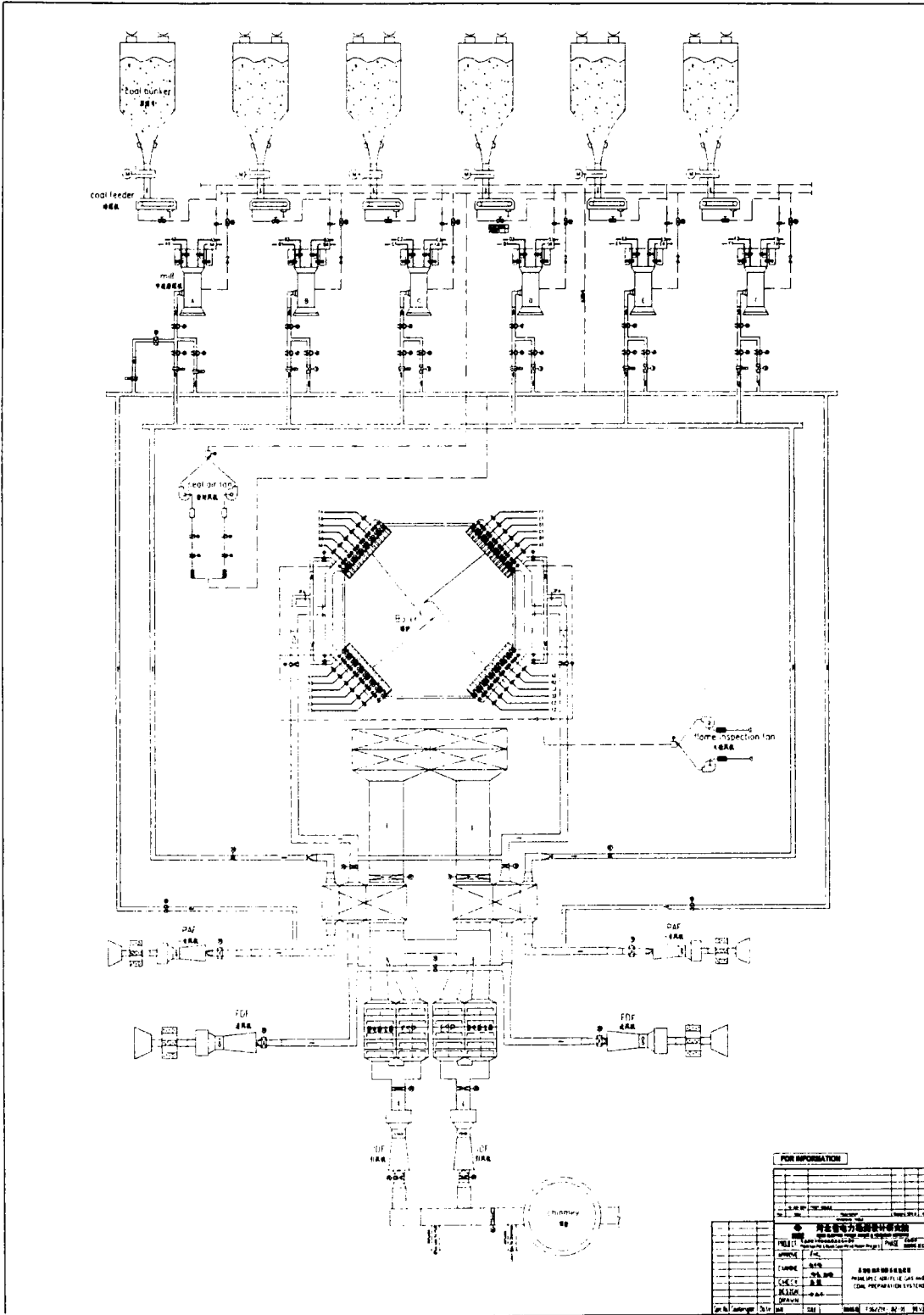
NO.	DESCRIPTION	DATE	BY	CHECKED BY
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50



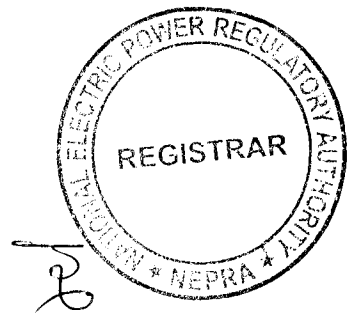


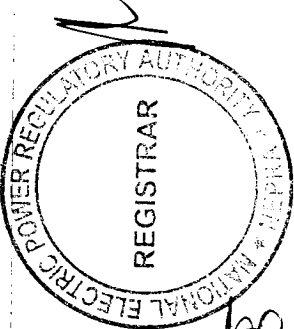
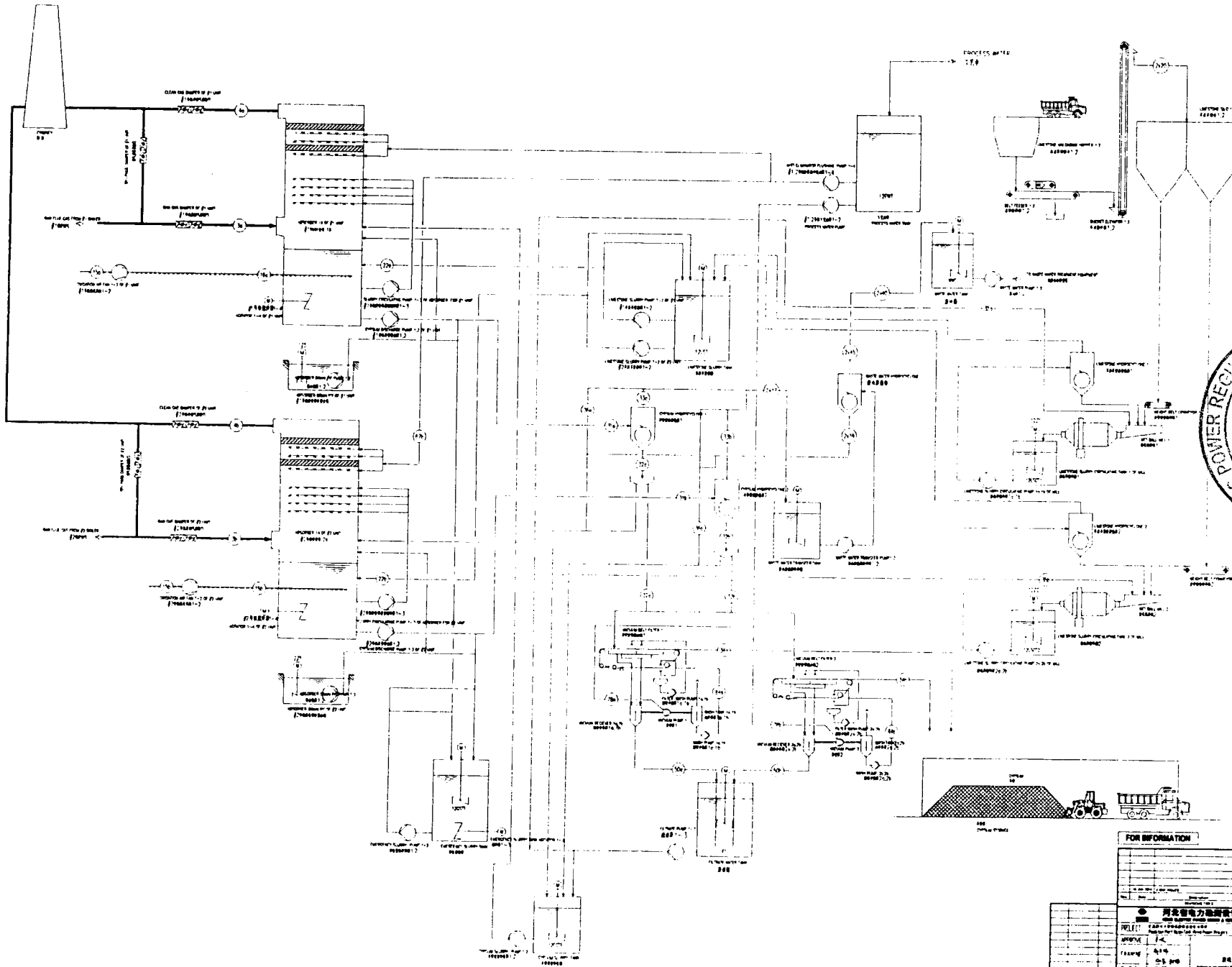
[Handwritten signature]





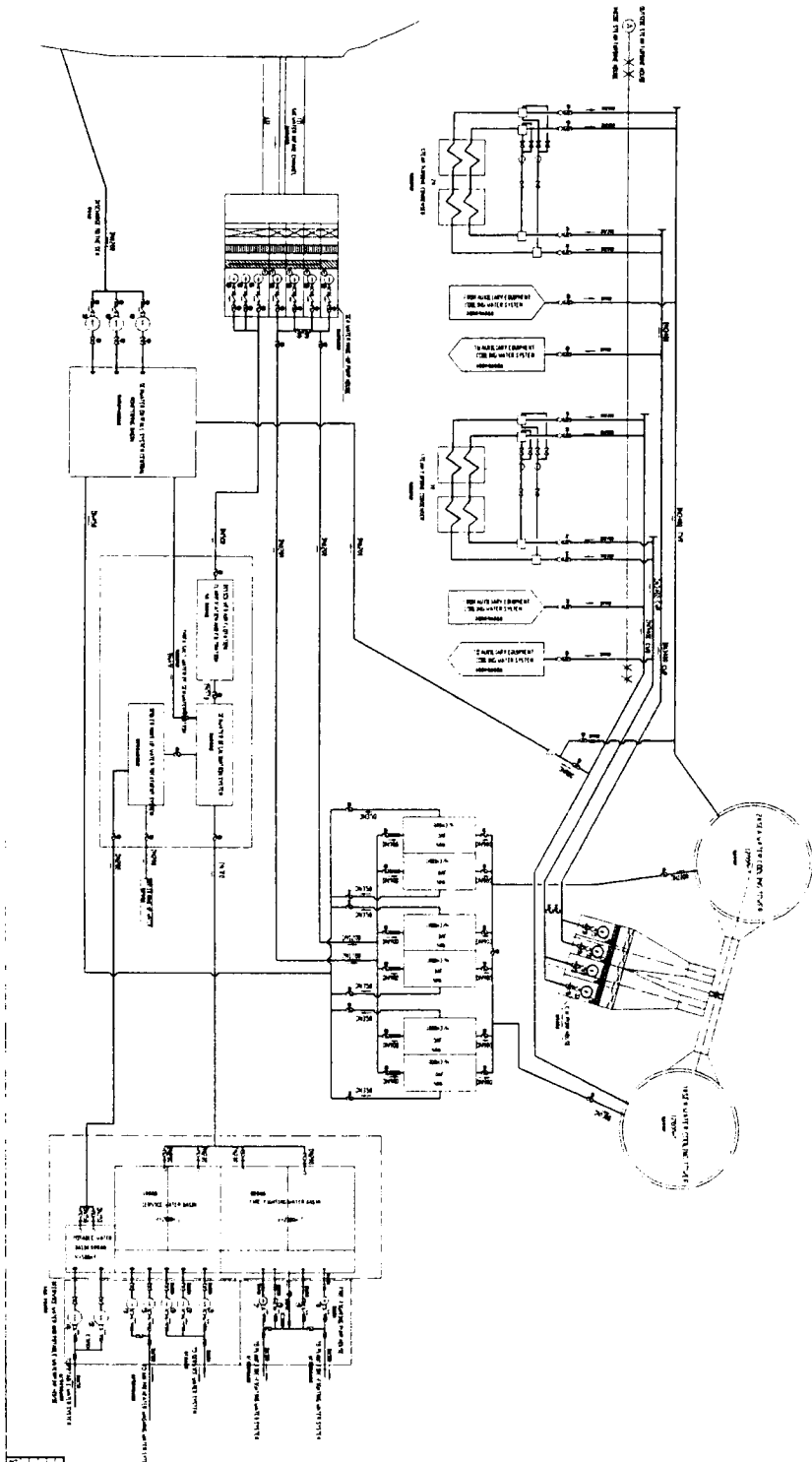
FOR INFORMATION	
DATE	
TIME	
PROJECT	Port Qasim Electric Power Company (Private) Limited
APPROVE	For
DESIGN	For
CHECK	For
REVISION	For
DATE	
TIME	





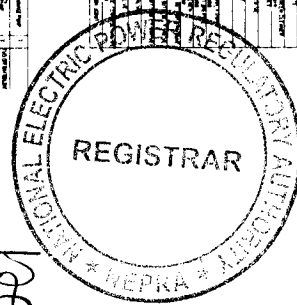
FOR INFORMATION

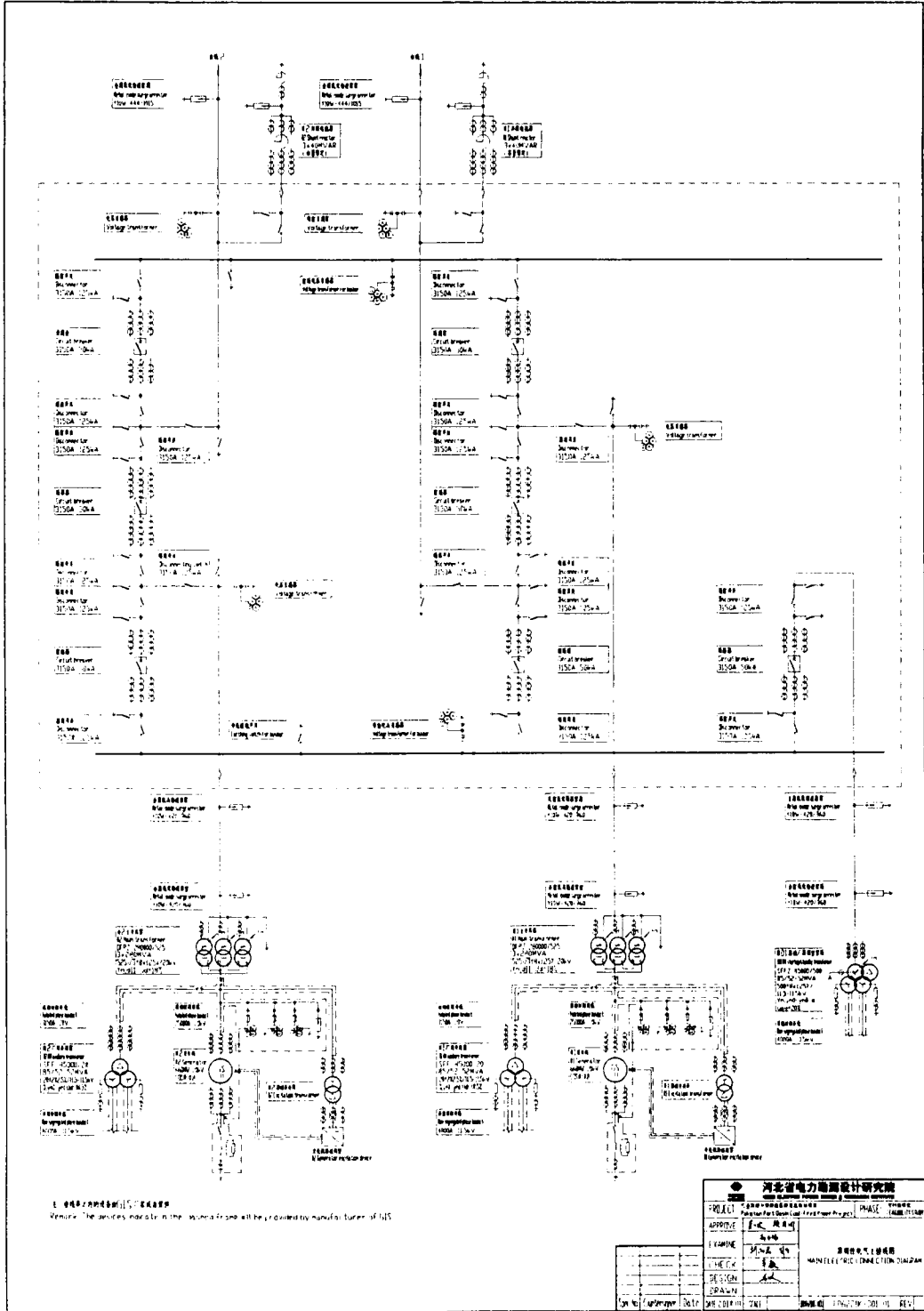
FOR INFORMATION	
DATE	17/07/2017
PROJECT	Bin Qasim Industrial Park
CLIENT	Port Qasim Electric Power Company (Private) Limited
SCALE	AS SHOWN
CHECKED BY	SAJID
DESIGNED BY	SAJID
DATE	17/07/2017



Sl. No.	Description	Quantity	Unit	Remarks
1
2
3
4
5
6
7
8
9
10

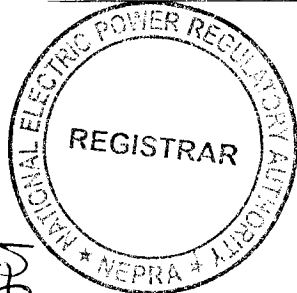
Sl. No.	Description	Quantity	Unit	Remarks
1
2
3
4
5
6
7
8
9
10

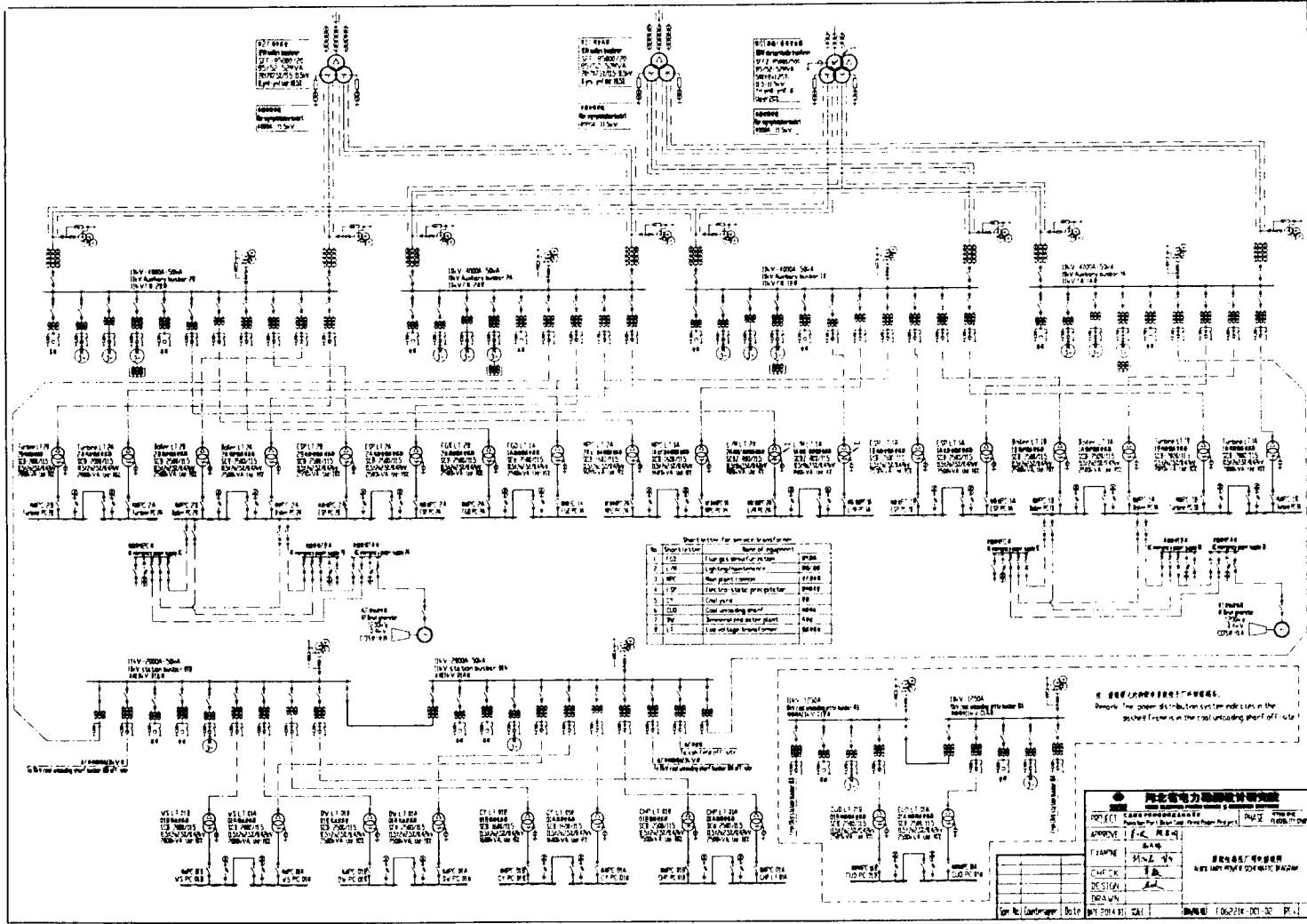




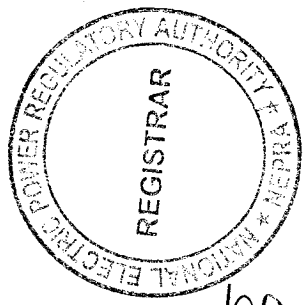
注意：本图所列各元件之规格及型式将由制造商提供

河北省电力勘测设计研究院			
PROJECT	设计阶段	设计日期	设计人
APPROVE	审核	审核日期	审核人
DATE	日期	日期	日期
DESIGN	设计	设计	设计
SCALE	比例	比例	比例
NO.	图号	图号	图号





M.



RP

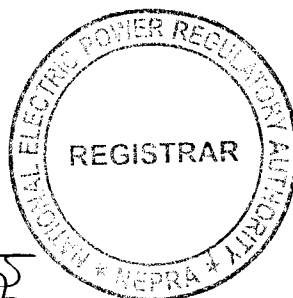
RA

**Interconnection Facilities/
Transmission Arrangements for Dispersal of Power from
the Generation Facility**

The electric power from the Imported Coal based generation facility/power plant of the Licensee/Port Qasim Electric Power Company (Private) Limited will be dispersed to the National Grid.

(2). The Interconnection Facilities (IF)/Transmission Arrangements (TA) for supplying to National Grid from the above mentioned generation facility shall be at 500 KV level. The dispersal/interconnection arrangement for supplying to National Grid will be consisting of a 500 KV Double Circuit (D/C) Transmission Line measuring about 180 Kilometer (Quad Bundled of AASC Greeley Conductor) connecting the generation facility with 500 KV Matiari Grid Station of NTDC.

(3). Any change in the above mentioned IF/TA for dispersal of electric power as agreed by the Licensee and the Power Purchaser shall be communicated to the Authority in due course of time.



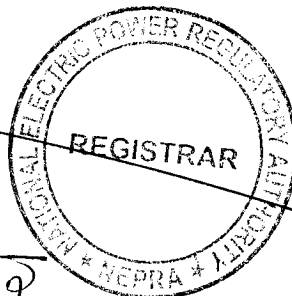
**Detail of
Generation Facility/
Power Plant**

(A). General Information

(i).	Name of Company/ Licensee	Port Qasim Electric Power Company (Private) Limited.
(ii).	Registered /Business Office	1 st Floor State Life Insurance Corporation- SLIC Building No.7, Blue Area, Islamabad.
(iii).	Plant Location	Bin Qasim Industrial Park, at Port Qasim Karachi, in the Province of Sindh.
(iv).	Type of Generation Facility	Thermal Generation Facility

(B). Plant Configuration

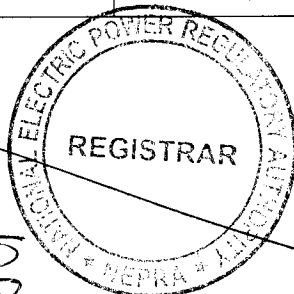
(i).	Plant Size Installed Capacity	1320.00 MW	
(ii).	Type of Technology	Conventional Thermal Power Generation Facility with Super Critical Boiler and Steam Turbine	
(iii).	Number of Units/Size (MW)	2 x 660 MW	
(iv).	Unit Make/Model/Type & Year of Manufacture Etc.	Steam turbine	N660-24.2/566/566 Super- critical, Reheat, Tandem compound three Cylinders, four (or two) flow exhausts, condensing Steam Turbine/DongFong/Siemens/ Harbin or Equivalent
		Boiler	Supercritical thermal power unit, variable pressure operation, once-through, single intermediate reheating/ DongFong/Siemens/Harbin or Equivalent



(v).	Expected COD of the Generation Facility	December 31, 2017
(vi).	Expected Useful Life of the Generation Facility from COD	30 years

(C). Fuel/Raw Material Details

(i).	Primary Fuel	Imported Bituminous/Sub-Bituminous Coal	
(ii).	Start-Up Fuel	High Speed Diesel/HSD	
(iv).	Fuel Source for each of the above (i.e. Imported/Indigenous)	Primary Fuel	Start-Up Fuel
		Bituminous/Sub-Bituminous Coal from the countries surrounding India Ocean, i.e. Indonesia, South Africa, Botswana or Australia, etc.	Indigenous/Imported
(v).	Fuel Supplier for each of the above	Primary Fuel	Start-Up Fuel
		Apex Dragon Holdings limited	Shell Pakistan/Pakistan State Oil/Any other OMC Company
(vi).	Supply Arrangement for each of the above Fuels	Primary Fuel	Start-Up Fuel
		Through Ships and Jetty etc.	Through Oil Tankers
(vii).	No of Storage Bunkers/Tanks/ Open Yard	Primary Fuel	Start-Up Fuel
		One open yard	Two oil tanks



(viii).	Storage Capacity of each Bunkers/Tanks/ Open Yard	Primary Fuel	Start-Up Fuel
		About 390,000 Tons	500m ³
(ix).	Gross Storage	Primary Fuel	Start-Up Fuel
		About 390,000 Tons	1000m ³

(D). Emission Values

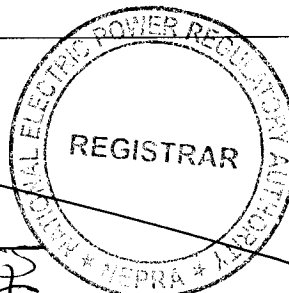
		Primary Fuel	Start-Up Fuel
(i).	SO _x (mg/Nm ³)	<200	<200
(ii).	NO _x (mg/Nm ³)	<450	<450
(iii).	CO ₂ (%)	<15	-

(E). Cooling System

(i).	Cooling Water Source/Cycle	The cooling water is from adjacent sea channel of Port Qasim south of the site. Natural cooling tower Seawater secondary circulation system will be adopted for cooling water system.
------	----------------------------	---

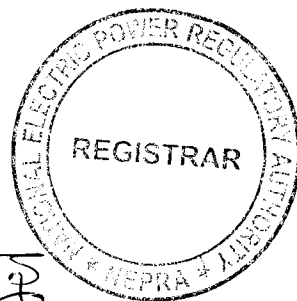
(F). Plant Characteristics

(i).	Generation Voltage	20-22kV
(ii).	Frequency	50Hz
(iii).	Power Factor	0.8 (lagging) / 0.95(leading)
(iv).	Automatic Generation Control (AGC) (MW control is the general practice)	AGC Unit is included in the NCS, and AGC Unit can accept command single from despatch. The command signal is converted to analog, and then the analog transmitted to the DCS via hardwire to achieve the AGC function.



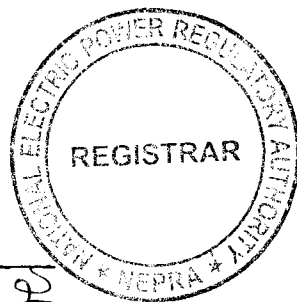
Handwritten signatures and initials are present at the bottom of the page, including a large signature on the left and another on the right.

(v).	Ramping Rate (MW/min)	(i). 33 MW/min from 50% to 100%MCR (ii). 19.8 MW/min from 30% to 50%MCR (iii). 13.2 MW/min under 30%MCR
(vi).	Time required to Synchronize to Grid (Hrs.)	(i). 4.25 hours for Cold Start (ii). 2 hours for Warm Start (iii). 0.75 hours for Hot Start



SCHEDULE-II

The Installed/ISO Capacity (MW), De-Rated Capacity At Mean Site Conditions (MW), Auxiliary Consumption (MW) and the Net Capacity At Mean Site Conditions (MW) of the Generation Facilities of Licensee is given in this Schedule



SCHEDULE-II

(1).	Total Gross Installed Capacity of the Generation Facility	1320.00 MW
(2).	De-rated Capacity of Generation Facility at Reference Site Conditions	1320.00 MW
(3).	Auxiliary Consumption of the Generation Facility	0099.00 MW
(4).	Total Installed Net Capacity of Generation Facility at Reference Site Condition	1221.00 MW

Note

All the above figures are indicative as provided by the Licensee. The Net Capacity available to Power Purchaser for dispatch will be determined through procedure(s) contained in the Power Purchase Agreement or any other applicable document(s).

